



CAPRISA

CENTRE FOR THE AIDS PROGRAMME OF RESEARCH IN SOUTH AFRICA

Newsletter

In this Issue

In this issue of the CAPRISA Newsletter, the spotlight is on the journal article discussing the timing of HIV-1 infection of cells that persist on therapy, providing insights into the replication competency and cellular tropism of the provirus.

The subsequent pages feature events such as CAPRISA hosting an HIV Prevention workshop, Prof.

Quarraisha Abdool Karim addressing global leaders at the World Forum for Women in Science 2024, and the University of Free State conferring an honorary degree on Prof. Salim Abdool Karim.

Additionally, the newsletter covers the visit of scientists from the Scripps Consortium for HIV/AIDS Vaccine Development to CAPRISA, as well as Prof. Kogie Naidoo's emphasis on the criticality of finding TB to end TB.



Furthermore, the newsletter delves into CAPRISA's engagement with Traditional Health Practitioners for a TB dialogue, conducting a Community Research Scientific Group Training Workshop, and the induction of Prof. Quarraisha Abdool Karim as an honorary international member of the American Academy of Arts and Sciences. Additionally, it highlights the appointment of Prof. Koleka Mlisana as the NHLS CEO, along with a selection of published scientific papers that demonstrate CAPRISA's ongoing scientific contributions.

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Timing of HIV-1 infection of cells that persist while on ART

A pool of latently infected cells persists in persons living with HIV on antiretroviral therapy (ART). As a result, if therapy is interrupted, the virus rapidly rebounds in most instances. These latently infected cells predominantly harbour defective viral genomes with only a small proportion (approximately 10%) capable of giving rise to rebound. Collaborative work between the University of Cape Town, CAPRISA and the University of North Carolina previously showed in nine women from the CAPRISA 002 cohort, that these replication-competent viruses are most closely related to viruses that were circulating in the blood in the year leading to ART initiation (late entry).

In a follow-up study published by Joseph et al. in PLoS Pathogens, this same group have shown in 18 CAPRISA002 women that this finding extends to viruses that represent the defective portion of this latently infected pool. Through next-generation sequencing and phylogenetics, it was demonstrated that 60% of defective proviruses originated from the year prior to ART initiation as compared to 69% for replication-competent viruses. Furthermore, there was no selection for viruses with a specific receptor specificity for cell entry to persist on ART. Interestingly, the percentage of late-entry viruses correlated negatively with nadir CD4+ T-cell count in these women, pointing to the possibility that the observed bias for late-entry viruses may be a result of immune cell reconstitution post-ART introduction.

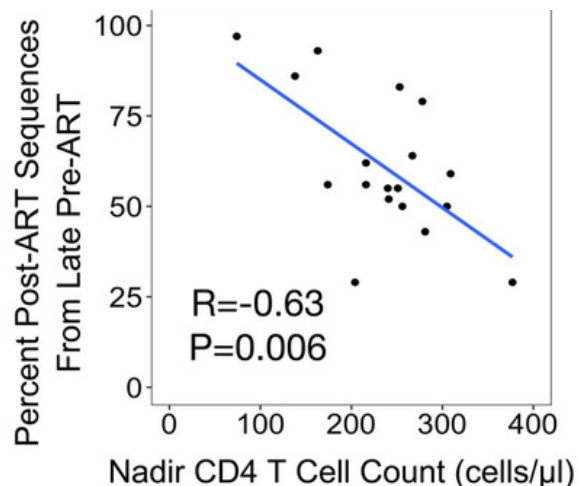


Figure 1. Entry of Viral Sequences into the Long-Lived Pool of Cells Near the Time of Therapy Initiation ("Late") Correlates with Low Nadir CD4+ T Cell Counts. The % of unique viral sequences (replication-competent and defective) that were replicating within the year before initiation of therapy is plotted as a function of nadir CD4+ T cell count prior to the initiation of therapy. A significant, inverse correlation (Pearson; $R=-0.63$, $P=0.006$) is seen.

For further reading: <https://journals.plos.org/plospathogens/article?id=10.1371/journal.ppat.1011974>

CAPRISA Hosts HIV Prevention Workshop



Global experts in HIV treatment, prevention, cure, and tuberculosis (TB) gathered at the HIV Prevention Workshop 24-26 April 2024, Champagne Sports Resort, Drakensberg. The joint meeting made possible through the collaboration of CAPRISA, Ragon Institute, HPP, and AHRI was kicked off by Prof Salim Abdool Karim, who mapped out the challenge ahead for effective HIV prevention and the road to achieving the millennium development goals, particularly in adolescent women and young girls. The subsequent sessions were thematically crafted to highlight previously tested pre-exposure prophylaxis (PrEP) modalities and the pipeline ahead for both PrEP and passive immunisation using broadly neutralising antibodies (bnAbs).

This was followed by the HIV vaccine session, which underscored the current vaccines in the field and the need to fast-track clinical trial testing using mRNA vaccine technologies to elicit bnAbs. The HIV reservoir and cure session highlighted the current capabilities in science for understanding and quantifying the HIV reservoir and rebound viruses. The microbiome session covered alternative innovative strategies to perturb and potentially rewire the vaginal microbiome for bacterial vaginosis and HIV prevention. For the very first time, a session devoted to TB was included and highlighted the challenges and opportunities for TB vaccine discovery and in treating existing TB disease. What made this meeting rather special was the multidisciplinary and diverse mix of topics, which encouraged a rich and robust panel discussion on the way forward using innovative approaches to curb HIV and TB, two major converging epidemics significantly impacting mainly sub-Saharan African populations.

Prof Quarraisha Abdool Karim Addresses Global Leaders at the World Forum for Women in Science 2024

Prof Quarraisha Abdool Karim presented as the opening speaker at the World Forum for Women in Science (WFWS) 2024. Under the theme "Envisioning Tomorrow: Science for the SDGs and New Partnerships for Sustainable Futures," the WFWS was co-organised by Women in Science Without Borders and Traces & Dreams in collaboration with Fondazione Musica per Roma/Festival delle Scienze, setting the stage for discussions among global leaders in science, diplomacy, and sustainability.

Her opening address set the tone for the overall discussion of the forum, emphasising the importance of networking and partnerships in advancing science for sustainable development. The meeting was an international opportunity to spotlight the contributions of women in science and the gender-based inequalities in science. The Forum is resoundingly committed to advancing the role of women in science and promoting global scientific partnerships for sustainable futures.

WORLD FORUM WOMEN IN SCIENCE 2024

ENVISIONING TOMORROW

Opening Plenary Session

MONDAY, THE 15TH OF APRIL 10:15 - 11:45 CET

The importance of Networking, Science Diplomacy and Partnerships

Prof. Quarraisha Abdool Karim Topic: <i>plenary</i>	Dr. Angela Liberatore Head of the Scientific Management Department, European Research Council Executive Agency	Prof. Priscilla Kelliea Mante Faculty of the College, York University
Prof. Emanuela Colombo UNESCO Chair "Energy & Sustainable Development", Politecnico di Milano	Dr. Charles Lebon Mbari Kiripolo Director, Africa Research Centre for Mathematical Sciences, Heriot Watt University	Mrs. Brenda Behan Director of the Gender, Protection, and Inclusion Service, UN World Food Programme

Moderated by

Prof. Amal Amin Professor at the National Research Centre, Egypt ISC Fellow	Nerina Finetto Founder and CEO of Traces&Dreams AB
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University of the Free State honorary doctorate for CAPRISA Director



The University of the Free State (UFS) conferred an honorary degree upon Professor Salim Abdool Karim during its April graduation ceremonies on the Bloemfontein Campus on April 18, 2024. He was awarded a PhD in Medical Virology (h.c.) in recognition of his important work and scholarship in the field of medical virology. Renowned for his significant advancements in HIV/AIDS and Covid-19, Abdool Karim's international recognition reflected his leadership in the global AIDS response and his major contributions during the Covid-19 pandemic in promoting science and evidence in defining the pandemic response.

He also made important contributions as a special adviser on pandemics to the World Health Organization (WHO) and as a member of essential scientific councils and academies. This distinction acknowledged his exceptional impact on public health and scientific innovation. Alongside Abdool Karim, Archbishop Thabo Makgoba was also honoured for his outstanding service to the public with a PhD in Theology (h.c.). These conferred degrees recognised the valuable contributions of these individuals to society in line with the UFS's ideals and principles.

Scripps Consortium for HIV/AIDS Vaccine Development (CHAVD) scientists visit CAPRISA



On April 23, 2024, members of the Scripps Consortium for HIV/AIDS Vaccine Development (CHAVD), including lead scientists, investigators, and associates, paid a visit to the CAPRISA eThekweni Research clinic. They were hosted by Professor Nigel Garrett, the site Director, and the Head of Vaccines and Pathogenesis. Their visit marked a significant step in fostering collaboration and advancing research efforts in the field of HIV/AIDS vaccine development.

Finding TB is central to ending TB, says Prof Kogie Naidoo of CAPRISA

In conversation with veteran journalist Ashok Ramsarup, Prof Kogie Naidoo, Head of the Treatment Research Programme at CAPRISA, delved into the urgent need to #FindAllTB in order to #endTB. During the END TB Dialogues, she emphasised the critical role of identifying and addressing all cases of TB to effectively combat the disease. The conversation shed light on the current challenges in the fight against TB, the importance of community engagement, and the strategies needed to achieve the goal of ending TB. As a prominent figure in TB research and public health advocacy, Prof Naidoo's insights and expertise are positioned to inform and drive progress in the global effort to eradicate TB. You can find her recent interview here: <https://www.youtube.com/watch?v=Zmbnqd5mh5Y>.



CAPRISA hosts Traditional Health Practitioners TB Dialogue



CAPRISA and the KwaZulu-Natal Traditional Health Practitioners (THPs) joined forces for a tuberculosis (TB) dialogue at the Diakonia Centre in Durban on April 10, 2024. The event aimed to increase knowledge and understanding of TB treatment and prevention, discuss the vital role of Traditional Health Practitioners, and strengthen efforts to integrate their contributions into the mainstream health system.

The dialogue sought to enhance TB screening and case finding, bolster TB cure rates and adherence, and contribute to the 2035 TB goal. The gathering featured presentations by CAPRISA Deputy Director Professor Kogie Naidoo, who addressed the current state of the TB epidemic and the roadmap to achieving the 2030 TB goals. Professor Gqaleni from the Africa Health Research Institute emphasised the role of traditional health practitioners in curbing TB spread, while Mrs Radebe, Deputy Director of the KZN Unit, focused on integration to meet TB targets. Gogo Mshanyelo, the Provincial THP Chairperson, acknowledged Professor Gqaleni's training of THP KZN, underscoring the importance of writing referrals for clients with TB symptoms. The event was part of the KZN TB Day activities on the 2024 World TB Day theme: Yes! We can end TB.

By fostering collaboration between CAPRISA and KZN THPs, the dialogue aimed to improve community-based TB efforts and promote harm reduction, ultimately advancing the shared goal of eradicating TB.

CAPRISA holds Community Research Scientific Group Training Workshop



CAPRISA hosted a Community Research Scientific Group (CRSG) training workshop under the theme, "We Are the Ones." The workshop was held at the Riverside Hotel in Durban on 24-25 April 2024, facilitated by CAPRISA's Head of Community Programmes, Mr Patrick Mdletshe. The purpose of the workshop was to build capacity and accountability components for the Community Advisory Board (CAB). An exchange of ideas and knowledge among a diverse group of participants took place, which included discussions on South Africa's HIV/AIDS epidemiology, strategies to end AIDS by 2030, and harmful sexual practices, HIV, and HPV among young women.

In addition, the sessions covered important topics such as meeting TB targets, reaching 2030 goals, and community ownership of research, focusing on guidelines for post-clinical trials. Additionally, there was a detailed examination of broadly neutralising antibodies (bnAbs) and an explanation of CAPRISA Community Advisory Board (CAB) terms of reference. The workshop concluded with updates on CAPRISA research studies, providing a comprehensive overview of the organisation's ongoing initiatives. "We Are the Ones" fostered a platform for collaborative learning and knowledge sharing.

WAS President, Quarraisha Abdool Karim, at the International Decade of Science for Sustainable Development Forum in Beijing



Professor Quarraisha Abdool Karim, President of The World Academy of Sciences (TWAS) and Associate Scientific Director of the Centre for the AIDS Programme of Research in South Africa (CAPRISA), presented at the "International Decade of Sciences for Sustainable Development Forum" in Beijing, China. This gathering, which took place on 25 April 2024, provided a forum for esteemed scientists, experts, and senior government officials from nine countries to share their perspectives and exchange insights on the implementation of the Science Decade. The event fostered a high-level dialogue, emphasising the importance of engaging society in nurturing a culture of science, drawing an impressive turnout of over 150 participants from more than twenty countries.

Quarraisha Abdool Karim elected an Honorary International Member of the American Academy of Arts and Sciences

Professor Quarraisha Abdool Karim has been elected as an Honorary International Member of the American Academy of Arts and Sciences. This 250-year-old organisation recognises outstanding work in many fields. It brings together leaders to discuss important problems and support a free and open society that includes everyone. The American Academy of Arts and Sciences follows the principles of helping society and valuing diversity. It works to develop knowledge based on evidence and encourages discussions that consider all viewpoints.



Professor Koleka Mlisana Appointed as NHLS CEO

Professor Koleka Mlisana has been appointed as the Chief Executive Officer of the National Health Laboratory Service (NHLS), effective from 1 May 2024. Prof. Mlisana's noteworthy career as the country's first black microbiologist has been marked by exceptional dedication and leadership in advancing healthcare in South Africa. Her experience in healthcare leadership, combined with her academic and public health expertise, makes her an ideal candidate to elevate NHLS and continue its mission of providing high-quality laboratory services and advancing public health initiatives nationwide. The entire CAPRISA community congratulates Prof. Mlisana on her well-deserved appointment.

A SELECTION OF PUBLISHED SCIENTIFIC PAPERS

- 12** Narasimhan M, Hargreaves JR, Logie CH, **Abdool Karim Q**, Aujla M, Hopkins J, Cover J, Sentumbwe-Mugisa O, Maleche A, Gilmore K. Self-care interventions for women's health and well-being. *Nature Medicine*. 2024 Mar;30(3):660-669. doi: 10.1038/s41591-024-02844-8. PMID: 38454127.
- 13** Trkola A, **Moore PL**. Vaccinating people living with HIV: a fast track to preventive and therapeutic HIV vaccines. *Lancet Infectious Diseases*. 2024 Apr;24(4):e252-e255. doi: 10.1016/S1473-3099(23)00481-4. PMID: 37883985.
- 14** Nimmo C, Bionghi N, Cummings MJ, **Perumal R**, Hopson M, Al Jubaer S, **Naidoo K**, Wolf A, Mathema B, Larsen MH, **O'Donnell M**. Opportunities and limitations of genomics for diagnosing bedaquiline-resistant tuberculosis: a systematic review and individual isolate meta-analysis. *Lancet Microbe*. 2024 Feb;5(2):e164-e172. doi: 10.1016/S2666-5247(23)00317-8. PMID: 38215766.
- 15** Hayward G, Yu LM, Little P, Gbinigie O, Shanyinde M, Harris V, **Dorward J**, Saville BR, Berry N, Evans PH, Thomas NPB, Patel MG, Richards D, Hecke OV, Detry MA, Saunders C, Fitzgerald M, Robinson J, Latimer-Bell C, Allen J, Ogburn E, Grabey J, de Lusignan S, Hobbs FR, Butler CC; PRINCIPLE Trial Collaborative Group. Ivermectin for COVID-19 in adults in the community (PRINCIPLE): An open, randomised, controlled, adaptive platform trial of short- and longer-term outcomes. *Journal of Infection*. 2024 Apr;88(4):106130. doi: 10.1016/j.jinf.2024.106130. PMID: 38431155; PMCID: PMC10981761.
- 16** Standing JF, Buggiotti L, Guerra-Assuncao JA, Woodall M, Ellis S, Agyeman AA, Miller C, Okechukwu M, Kirkpatrick E, Jacobs AI, Williams CA, Roy S, Martin-Bernal LM, Williams R, Smith CM, Sanderson T, Ashford FB, Emmanuel B, Afzal ZM, Shields A, Richter AG, **Dorward J**, Gbinigie O, Van Hecke O, Lown M, Francis N, Jani B, Richards DB, Rahman NM, Yu LM, Thomas NPB, Hart ND, Evans P, Andersson M, Hayward G, Hood K, Nguyen-Van-Tam JS, Little P, Hobbs FDR, Khoo S, Butler C, Lowe DM, Breuer J; PANORAMIC Virology Group. Randomized controlled trial of molnupiravir SARS-CoV-2 viral and antibody response in at-risk adult outpatients. *Nature Communications*. 2024 Feb 23;15(1):1652. doi: 10.1038/s41467-024-45641-0.
- 17** 17 Karim F, Riou C, Bernstein M, Jule Z, **Lustig G**, van Graan S, Keeton RS, Upton JL, Ganga Y, Khan K, Reedoy K, Mazibuko M, Govender K, Thambu K, Ngcobo N, Venter E, Makhado Z, Hanekom W, von Gottberg A, Hoque M, **Abdool Karim Q**, **Abdool Karim SS**, Manickchand N, Magula N, Gosnell BI, **Lessells RJ**, **Moore PL**, Burgers WA, **de Oliveira T**, Moosa MS, **Sigal A**. Clearance of persistent SARS-CoV-2 associates with increased neutralizing antibodies in advanced HIV disease post-ART initiation. *Nature Communications*. 2024 Mar 15;15(1):2360. doi: 10.1038/s41467-024-46673-2. PMID: 38491050; PMCID: PMC10943233.
- 18** Magaret CA, Li L, deCamp AC, Rolland M, Juraska M, Williamson BD, Ludwig J, Molitor C, Benkeser D, Luedtke A, Simpkins B, Heng F, Sun Y, Carpp LN, Bai H, Dearlove BL, Giorgi EE, Jongeneelen M, Brandenburg B, McCallum M, Bowen JE, Veessler D, Sadoff J, Gray GE, Roels S, Vandebosch A, Stieh DJ, Le Gars M, Vingerhoets J, Grinsztejn B, Goepfert PA, de Sousa LP, Silva MST, Casapia M, Losso MH, Little SJ, Gaur A, Bekker LG, **Garrett N**, Truysers C, Van Dromme I, Swann E, Marovich MA, Follmann D, Neuzil KM, Corey L, Greninger AL, Roychoudhury P, Hyrien O, Gilbert PB. Quantifying how single dose Ad26.COV2.S vaccine efficacy depends on Spike sequence features. *Nature Communications*. 2024 Mar 11;15(1):2175. doi: 10.1038/s41467-024-46536-w. PMID: 38467646; PMCID: PMC10928100.
- 19** Jaumdally S, Tomasichio M, Pooran A, Esmail A, Kotze A, Meier S, Wilson L, Oelofse S, van der Merwe C, Roomaney A, Davids M, Suliman T, Joseph R, Perumal T, Scott A, Shaw M, Preiser W, Williamson C, Goga A, Mayne E, Gray G, **Moore P**, Sigal A, Limberis J, Metcalfe J, Dheda K. Frequency, kinetics and determinants of viable SARS-CoV-2 in bioaerosols from ambulatory COVID-19 patients infected with the Beta, Delta or Omicron variants. *Nature Communications*. 2024 Mar 5;15(1):2003. doi: 10.1038/s41467-024-45400-1. PMID: 38443359; PMCID: PMC10914788.
- 20** Moodie Z, Andersen-Nissen E, Grunenberg N, Dintwe OB, Omar FL, Kee JJ, Bekker LG, Laher F, **Naicker N**, Jani I, Mgodini NM, Hunidzarira P, Sebe M, Miner MD, Polakowski L, Ramirez S, Nebergall M, Takuya S, Sikhosana L, Heptinstall J, Seaton KE, De Rosa S, Diazgranados CA, Koutsoukos M, Van Der Meeren O, Barnett SW, Kanesa-Thanan N, Kublin JG, Tomaras GD, McElrath MJ, Corey L, Mngadi K, Goepfert P; HVTN 107 Protocol Team. Safety and immunogenicity of a subtype C ALVAC-HIV (vCP2438) vaccine prime plus bivalent subtype C gp120 vaccine boost adjuvanted with MF59 or alum in healthy adults without HIV (HVTN 107): A phase 1/2a randomized trial. *PLoS Medicine*. 2024 Mar 19;21(3):e1004360. doi: 10.1371/journal.pmed.1004360. PMID: 38502656; PMCID: PMC10986991.
- 21** Voutouri C, Hardin CC, **Naranbhai V**, Nikmaneshi MR, Khandekar MJ, Gainor JF, Stylianopoulos T, Munn LL, Jain RK. In silico clinical studies for optimal COVID-19 vaccination schedules in patients with cancer. *Cell Reports Medicine*. 2024 Mar 19;5(3):101436. doi: 10.1016/j.xcrm.2024.101436. PMID: 38508146.
- 22** Nimmo C, Ortiz AT, Tan CCS, Pang J, Acman M, Millard J, **Padayatchi N**, Grant AD, **O'Donnell M**, Pym A, Brynildsrud OB, Eldholm V, Grandjean L, Didelot X, Balloux F, van Dorp L. Detection of a historic reservoir of bedaquiline/clofazimine resistance-associated variants in *Mycobacterium tuberculosis*. *Genome Medicine*. 2024 Feb 19;16(1):34. doi: 10.1186/s13073-024-01289-5. PMID: 38374151; PMCID: PMC10877763.
- 23** Joseph SB, Abrahams MR, Moeser M, Tyers L, Archin NM, Council OD, Sondgeroth A, Spielvogel E, Emery A, Zhou S, Doolabh D, Ismail SD, **Abdool Karim SS**, Margolis DM, Pond SK, Garrett N, Swanstrom R, **Williamson C**. The timing of HIV-1 infection of cells that persist on therapy is not strongly influenced by replication competency or cellular tropism of the provirus. *PLoS Pathogens*. 2024 Feb 29;20(2):e1011974. doi: 10.1371/journal.ppat.1011974. PMID: 38422171; PMCID: PMC10931466.

* continuation from previous newsletter

For the complete list of publications see here: <http://bit.ly/31RvJzD>



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